Building Stronger with Culvert Inventory Data

Inventory Benefits

- Look system-wide to identify the most flood prone, high cost, & high impact sites
- Document the service life of each culvert
- Have time to develop a plan to upgrade the highest priority sites
- Track and share information over time with changing staff
- Increase the chances of cost share assistance
- Inventory maps can be overlapped with flood prone watershed "hot spots"
- Improve coordination with the multiple agencies involved during flood response and reimbursement
- Use data to inform and build broad support for transportation infrastructure spending decisions.

A significant challenge

- Time and money are stretched very thin given the amount of roadwork needed.
- Difficult to justify cost of improvements based on unknown future events & expenses.
- Limited data about total & long term (75+ years) costs.
- Floods will come again and there is every indication they will continue to get worse.

Lacking information to ID the highest priorities in each town/county, decisions are made site by site

Given scarce time and funds, this can lead to a strong preference for in-kind replacements at all sites.

Break the cycle of flood damage using culvert inventory data to identify and strategically improve the highest priorities.

- Where will the most time & money be saved with a larger flood resistant structure (likely to last 75+ yrs. vs. ~20 yrs. or less)?
- Long term cost savings result from reducing repeat construction /maintenance. Especially important at high cost sites (deeper fills, repetitive failures, larger structures, etc.)
- Where are the important sites from a stream or water quality perspective to benefit from various cost share opportunities?

Tips for Successful Cost Share Assistance

- A road crossing inventory is an important first step to find the highest priorities.
- Cooperative efforts that align the priorities and expertise of municipalities and conservation stakeholders are often the most competitive.
- Emphasize the public benefit of the improved road crossing from a broad range of perspectives including: flood resiliency, public safety, reduced maintenance, longer culvert lifespan, reduced stream impacts, long-term cost savings, etc.
- Partnerships can often result in assistance with grant application development, project documentation, and timely reimbursement.
- Projects with a preliminary design and budget prepared at the time of the grant application are more likely to stay on time and budget.

Contact your DNR transportation liaison for a copy of funding sources available. The document summarizes cost share opportunities to help improve municipal road crossings with flooding, water quality, and stream connectivity problems. DNR staff are also knowledgeable about the funding sources and active local groups in your area.

The new culvert has a higher capacity. The old undersized culvert can be seen in the background

Photo: 2017 WI Land & Water Conservation Annual Report.

Woods Creek in Florence County.

Additional information about research evaluating the costs and benefits of upgrading flood prone crossings:

Flood Effects on Road-Stream Crossing Infrastructure: Economic and Ecological Benefits of Stream Simulation Designs. http://fisheries.org/docs/wp/AFS-Fisheries-Magazine-February-2014.pdf

An Economic Analysis of Improved Road-Stream Crossings.
http://www.nature.org/ourinitiatives/regions/northamerica/road-stream-crossing-economic-analysis.pdf

Cost-Benefit Analysis of Stream-Simulation Culverts. (2015)
https://www.lafollette.wisc.edu/images/publications/cba/2014-culvert.pdf

Conservation Leverage: Ecological-Design Culverts also Return Fiscal Benefits
https://fisheries.org/2016/12/conservation-leverage-ecological-design-culverts-also-return-fiscal-benefits/